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R. BAKER & SON
Sulphur Recovery Unit (SRU) Dismantlement Project

ConocoPhillips Bayway Refinery – Linden, NJ
R. Baker & Son has nearly 80 years of experience in refinery demolition, selective demolition, and dismantling. Decades of expertise were put to good use when Baker was engaged by ConocoPhillips to dismantle two sulfur recovery units (SRUs) at their Bayway refining facility in Linden, New Jersey.

An SRU performs an essential step in natural gas and petroleum processing to recover sulfur and reduce hazardous sulfur emissions to minimal levels. When DuPont's Morses Mill facility took over sulfur recovery for Bayway's acid gas stream, it became necessary to dismantle two SRUs, including two 300-foot sulfur stacks and a 165-foot T-301 Stretford process tower, at the active petrochemical facility.

Working with the client to ensure integration with facility activities, the Baker team developed detailed, multi-phased master plan comprising site logistics, traffic control, work execution, critical lift and engineered rigging plans, safety, environmental, and recycling and disposal. It was determined that the project would require two excavators equipped with shear, grapple, and densifying attachments, three hydraulic cranes, and extensive aerial work by R. Baker & Son's expert crews.

Early-phase dismantling tasks included removal of rail sidings, vessels, piping, and associated equipment in adjacent areas. Once completed, dismantling of the stacks and towers commenced. The project required Baker crew members, suspended in man baskets from two 70-ton cranes, to pre-cut the T-301 tower into three sections using high-pressure water jet cutters.

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A 600-ton hydraulic crane was moved in to lower the sections to the ground. The cleared area was then leveled and stabilized to accommodate the 600-ton crane during dismantlement of the twin sulfur stacks and towers.

Dismantling of each sulfur stack began with the installation of spider lifts below the top tower platform. Using oxy-acetylene torches, workers hot-cut holes in 50-foot increments, from which they attached the stacks to the surrounding structure. Once the stack was secured to the structure, the uppermost section protruding above the platform was cut and removed, and crew members moved on to hot-cutting the inner stack into 50-foot suspended sections.

The 600-ton crane and two 190-ton cranes were positioned to commence removal of the structure. The structure was secured to the 600-ton crane, and **workers suspended from the two 190-ton cranes proceeded to hot-cut the structure into five 50-foot sections.** One by one, each structure/stack section was carefully lowered to the ground. The final ground level section was dismantled using excavators equipped with shear and grapple.

Following the removal of the stacks, **HAZMAT-trained workers moved in to clear sulfur recovery pits and remove asbestos and other hazardous waste**, strictly following proper remediation procedures. Scrap metal and masonry were recycled, and construction debris and insulation were segregated and disposed of properly. The 170-day project was successfully completed on time, without incident or injury, to our client's complete satisfaction.

How It Works:
Soil Vapor Extraction

Soil vapor extraction, or SVE, is a method used to safely remove hazardous contaminants from the ground above the water table. SVE is effective for volatile organic compounds (VOCs) that evaporate easily, such as solvents and gasoline.

SVE is accomplished by drilling one or more extraction wells into the ground to a depth above the water table and a vacuum pump is attached to pull air and vapors from the soil to the surface for treatment. The extracted off-gases are first piped into an air-water separator to remove moisture from the air, then processed to recover the contaminants.Activated carbon filters are usually used during this step, but other methods include biofiltration, in which bacteria is used to break down the vapors into gases, and heating the off-gases to high temperatures to destroy the vapors.

In cases where contaminants lie below the water table, a process called air sparging is used in tandem with SVE. Injection wells are drilled to a level beneath the water table and an air compressor pumps air through the wells into the groundwater-soaked soil. This causes vapor-laden air to bubble up through the groundwater and into the soil above the water table, where it is extracted using SVE.

ASBESTOS: What, Where and How

What is asbestos? Asbestos is a naturally occurring silicate mineral that is fire resistant, resists many chemicals, and is an excellent insulator. Mankind first recognized these outstanding qualities more than 4,500 years ago, using it in earthenware pots and cooking utensils, and asbestos has been heavily mined ever since. Considered worldwide to be a wonder material, it was used in a wide array of building products by the mid-20th century. Unfortunately, however, asbestos dust and fibers were found to cause deadly lung cancer, mesothelioma, and asbestosis, and the U.S. government prohibited its use in most building materials in the late ‘70s and early ‘80s.

Where is asbestos found? Many homes and most commercial and industrial buildings constructed before 1981 will contain asbestos. Most asbestos-containing materials do not pose a health risk when left undisturbed, but must be properly removed and disposed of prior to renovation and demolition. It should also be noted that even small maintenance operations, such as drilling holes in walls or floors, can release harmful asbestos fibers into the air. Materials that, if installed before 1981, should be presumed to contain asbestos include: spray-on fire proofing and insulation, insulation for pipes and boilers, wall and ceiling insulation, ceiling tiles, floor tiles, putties, caulks, cements, cement pipes, roofing and siding shingles, wall and ceiling texture, joint compound, and plasters. Almost all mechanical rooms constructed prior to 1981 will contain asbestos.

How is asbestos identified? Asbestos cannot be identified by sight, so samples must tested by an accredited laboratory. The most widely-used testing method for bulk building materials is polarized light microscopy, or PLM. Other microscopy methods (TEM, XRD, and SEM) can be used when fibers are too small for PLM analysis, or when other substances or particulates such as tar or petroleum are present.

R. Baker & Son provides a wide range of environmental services including asbestos abatement.
For more information, contact us at 732-222-3553.

“Not My Problem”: Providing Solutions

By David Baker, President

Few things are more frustrating for clients than the “not-my-problem” mentality that rears its ugly head when project problems arise. Far too often, the tendency among contractors is to ask “whose responsibility is this?” rather than the more appropriate – and productive – “how do we solve this?” R. Baker & Son subscribes to the latter school of thought.

Anyone who’s ever been involved in a construction project is all too aware that many contractors operate under the misguided policy of taking responsibility only for what is specifically outlined in specs and drawings. When problems occur, they will engage in finger-pointing and various other unproductive tactics that serve only to stall the project and frustrate all parties involved. This is contrary to how we operate.

The Baker Team is expert in recognizing problems and remedying them before they can occur, but not all problems are avoidable. To paraphrase a famous poet, “even the best laid plans can go awry”. We approach every problem head-on and take expedient steps to correct them, with no finger-pointing, no foot-dragging, no shoulder-shrugging, and no gouging. It’s how we’ve operated for nearly 80 years.